PIN14

ECONOMIC EVALUATION OF CASPOFUNGIN (CANCIDAS®) VERSUS LIPOSOMAL AMPHOTERICIN B FOR EMPIRICAL THERAPY OF SUSPECTED SYSTEMIC FUNGAL INFECTION IN THE GERMAN HOSPITAL SETTING

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OBJECTIVES: Caspofungin was non-inferior to liposomal amphotericin-B (L-AmB) in a recently conducted double-blind, randomized clinical trial (RCT) in 1095 hematology/oncology patients with persistent fever and neutropenia. Fewer patients developed nephrotoxicity with caspofungin than with L-AmB (2.6% vs. 11.5%, $p < 0.001$; Walsh et al., 2004). Based on the RCT data, cost and consequences of treatment with caspofungin versus L-AmB for empirical therapy of suspected systemic fungal infection were determined for the German hospital setting. **METHODS:** Our model is based on: (i) RCT nephrotoxicity rates; (ii) prolonged length of hospital stay due to nephrotoxicity in hematology/oncology patients in Europe (5.3 days, accounting perspective, 95%CI 1.6;9.1, $p = 0.004$; Ullmann et al., 2006); and (iii) bottom-up data on direct cost of hematology/oncology stay per day. Bootstrapping and Monte-Carlo simulations were performed (SAS 9.1.3, WinBUGS 1.4.1). Calculations were based on patient-individualized doses per treatment episode per RCT treatment arm (Caspofungin 13 days; L-AmB 12.5 days; 70 kg patient), on both, official German price list, and German high-user hospital antifungal acquisition cost. **RESULTS:** The number needed to treat for one patient to be harmed due to nephrotoxicity for L-AmB versus caspofungin was 12 (95%CI 8;17). The nephrotoxicity-related prolongation of hospital stay per patient was 0.48 days (95%CI 0.14;0.88). Based on official list prices, caspofungin was cost-saving compared to L-AmB. Based on high-user hospital pharmacy acquisition cost and cost from longer stay in hospital due to L-AmB nephrotoxicity, caspofungin was cost-saving at hospital cost per day of ≥€670, and ≥€1060, respectively, with and without "Zusatzentgelt" (2006), a partial compensation German hospitals can apply for to cover cost of caspofungin and L-AmB. **CONCLUSIONS:** This model provides a framework for hospital-based economic evaluations of two different antifungal agents with respect to tolerability and length of hospital stay. Such evaluations can improve the quality of medical care and help to thoughtfully allocate resources.

PIN15

CHRONIC HEPATITIS B (CHB) MANAGEMENT COSTS IN SWEDEN

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OBJECTIVE: Chronic Hepatitis B (CHB) can lead to cirrhosis and hepatocellular carcinoma. This study aims to estimate resource utilisation (RU) and costs associated with CHB management in Sweden, from a health-system perspective. **METHODS:** Medical management patterns were estimated for: Chronic Hepatitis B (CHB), Compensated Cirrhosis (CC), Decompensated Cirrhosis (DC), and Hepatocellular Carcinoma (HC). Resources considered were physician visits, drug therapy, lab tests, diagnostic/therapeutic procedures and hospitalisation. RU data were obtained from a Delphi panel of 5 hospital specialists. Complications considered for DC were: ascites, variceal haemorrhage, hepatic encephalopathy, and bacterial peritonitis. For HC, RU was estimated for the first year post identification of the cancer. Based on RU, 2005 direct costs were estimated per health state. **RESULTS:** Resource utilisation increased across disease states, reflecting disease progression. The average annual cost (range) of each state was: CHB: SEK 8001 (SEK 1891—SEK 17,011); CC: SEK 34,649 (SEK 7378—SEK 93,185); DC: SEK 135,783 (SEK 20,171—SEK 442,785); HC: SEK 280,009 (SEK 52,759—SEK 619,031); Average LT cost was SEK 668,027. Hospitalisation is a key cost driver in DC and HC states. No GP visits were reported. Hospital admissions were unneeded in the CHB state. For CC, 5.8% of patients needed 1.25 admissions (average 0.08) and in DC, 68% needed 2 admissions (average 1.4). In HC state, all patients were admitted on average 3.4 times. Average LOS in DC and HC states was 11 days. 35% of HC patients needed hospice admission with an average LOS of 38 days. Common procedures include paracentesis (60%), sclerotherapy (50%), and TIPS (30%) in the DC state, and paracentesis (70%), radiofrequency ablation (15%), and ethanol injection (10%) in HC. **CONCLUSIONS:** RU and costs increase with disease progression: costs for the HC state are more than 30 times those for the CHB stage.

PIN16

AN OBSERVATIONAL HEALTH-ECONOMIC ANALYSIS OF THE TREATMENT OF PATIENTS WITH VORICONAZOLE IN A REAL LIFE SETTING

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OBJECTIVE: To assess, in a real life setting, the predictive validity of a health-economic model that had been applied for the Belgian reimbursement submission of voriconazole in proven and probable invasive aspergillosis. **METHODS:** An observational study was designed to prospectively collect health-economic data of patients with invasive aspergillosis starting treatment with voriconazole. The same direct costs as in the model were considered: costs for hospital stay, diagnostic procedures, treatment/monitoring of side effects, outpatient care and use of anti-fungal drug(s). Resource utilization, expressed in physical units, was multiplied with unit costs from the public payer's perspective. Costs were expressed as total costs and costs for switchers/non-switchers from initial voriconazole treatment. Effectiveness was expressed as clinical response and survival rate at day 84. **RESULTS:** A total of 115 patients were included. The average total cost was €14,153 (C.I.: €11,493; €16,812). This was below the cost predicted by the model (€21,298). The difference was mainly caused by shorter hospitalization in this study (9.59 days) than assumed in the model (29.4 days). On average the total cost for switchers/non-switchers amounted to €16,216/€10,067 in this study, which was below the estimated cost of €27,586/€18,783 in the model, mainly due to a lower hospitalization cost. The clinical response rate (50% successful outcome) as well as the infection related survival rate (86.7%) were in line with the ones applied in the model and reported from the clinical trials (52% and 87.5% respectively). The overall survival rate was lower compared to the model (58% vs. 70.8%), likely due to treating patients with poor prognosis at baseline who would have been excluded from the clinical trial. **CONCLUSIONS:** This observational study demonstrated that the health-economic model provided an overestimate of the real

life costs with voriconazole and a good estimate of clinical response and survival rates.

PIN17

THE COST-EFFECTIVENESS OF A MENINGOCOCCAL SEROGROUP C CONJUGATE VACCINE IN GERMANY

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OBJECTIVES: Routine meningitis C (MenC) vaccination to individuals <18 years has been adopted in the UK since 1999 but is not yet available in Germany. Our aim was to estimate the costs and economic consequences of a routine MenC vaccination programme in Germany for children aged up to 10 years versus no vaccination. A secondary analysis considered a catch-up initiative for individuals aged 11 to 19. **METHODS:** A published cohort simulation model was adapted. Data to populate the model was obtained from published sources and official statistics. Incidence, mortality, and vaccine efficacy were estimated. Costs included the cost of the vaccination, inpatient management, insurance (benefit) payments to parents, and long-term disabilities. Costs were divided by effectiveness (life years gained) to estimate cost per life year gained. Population estimates were applied to consider the total cost of vaccination. Selecting credible data ranges and statistical distributions, a probabilistic sensitivity analysis was performed on ultra-sensitive parameters to evaluate the effects of multivariate uncertainty and generate 95% confidence limits. **RESULTS:** The annual cost of the vaccination programme was estimated to be €27.2 m, increasing to €59.7 m when factoring in the catch-up cohort. Managing infections and long-term costs were estimated to fall by €0.4 m and €0.6 m, respectively. Routine vaccination was estimated to avoid 6 deaths per year, increasing to 12 deaths avoided including catch-up. Findings were sensitive to disease incidence, vaccine efficacy, mortality and an incidence inflator for under-reporting. Cost-effectiveness was estimated at €64,203 (95% CI: 48,502–89,246) per life year gained for the primary analysis and €64,865 (51,130—86,412) when including the catch-up initiative. **CONCLUSIONS:** Our results demonstrate a reasonable level of cost-effectiveness for both vaccination strategies, with a relatively tractable overall impact on the wider health care system. Results are broadly similar to those reported in economic evaluations in other countries.

PIN18

COST-UTILITY ANALYSIS OF TREATMENT ALTERNATIVES IN PATIENTS WITH HBEAG POSITIVE CHRONIC HEPATITIS B

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OBJECTIVES: Antiviral therapy remains an important treatment strategy for chronic hepatitis B (CHB) in China. However, multiple antiviral strategies—interferon, lamivudine, adefovir, and their sequential use—have caused difficulties for health decision-makers in selecting cost-effective treatments, given their high prices and long-term interventions. This study assessed cost-effectiveness of current available treatment alternatives for patients with CHB in China. **METHODS:** A cost-utility analysis was conducted from the Chinese health care-sector perspective. We developed a decision-analytic model to simulate a 1-year disease progression. Markov model was used to simulate lifetime outcomes, based on 1-year results. The model was validated through discussion with leading hepatologists in China. Seven treatment alternatives, including no antiviral treatment, were considered for patients with HBeAg-positive CHB. The data on disease transition probabilities were primarily obtained from the randomized trials and meta-analyses, and validated by the clinician expert's panel. The data on utility of different diseases states were derived from a published study on Chinese patients. The resources use was obtained from a literature, and adjusted based on the expert panel's recommendations. The unit prices of resources 2006 were obtained from national and provincial registries. The costs were presented in US dollars. A rate of 5% was used to discount the costs. **RESULTS:** The base-case analysis showed that, of these seven treatment options, no antiviral therapy was dominated by all the antiviral treatment options. Interferon-adefovir sequential use dominated all the other alterative antiviral treatments, with US$562.3 per QALY gained (US$15215.8 for 27 QALYs). When the transition probability of HBeAg seroconversion in patients using adefovir was less than 0.157, and that of relapse rate higher than 0.032, lamivudine-adefovir strategy would be the dominant one. **CONCLUSIONS:** Interferon-adefovir appeared to be the most cost-effective strategies for CHB in China. However, clinical effects of adefovir might affect the robustness of results.

PIN19

COST-EFFECTIVENESS OF MASS VACCINATION WITH A ROTAVIRUS VACCINE IN THE NETHERLANDS

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OBJECTIVES: To estimate the cost-effectiveness of mass-vaccination with an oral rotavirus vaccine (RIX4414) compared to no vaccination from a societal perspective. **METHODS:** A Markov model was constructed for a hypothetical birth cohort, comparing two treatment arms, one receiving the vaccine, the other receiving standard care. In the model, seasonality of the virus, protection from breastfeeding, and nosocomial infections are taken into account. Direct medical costs and costs due to loss of productivity (of the parents) were estimated. Effects were expressed as the number of hospitalisations, GP visits, deaths, nosocomial infections, and the quality adjusted life years (QALYs) over a lifetime horizon. Costs and QALYs were combined into an incremental cost-effectiveness ratio (ICER). Data for the model were obtained from published local data on incidence of rotavirus infection and consequential health care consumption and from clinical studies measuring the effectiveness of the vaccine. Costs and effects were discounted at 4% and 1.5%, respectively. A probabilistic sensitivity analysis was performed. **RESULTS:** Mass-vaccination with RIX4414 shows a reduction in the number of GP consultations by 95.8%. Hospitalisations, nosocomial infections and deaths were reduced with 100%. This results in savings of €8.9 million for direct medical costs and of approximately €1 million for productivity costs, whereas the costs of vaccination are estimated at €16.5 million. Furthermore, 270 QALYs are gained, yielding an ICER of approximately €24,000. Sensitivity analysis shows that the probability for nosocomial infection and the probability of hospitalisation have the largest effect on the outcome. However, the prioritisation of the alternatives does not alter. **CONCLUSIONS:** Mass-vaccination against rotavirus disease with RIX4414 may be considered economically attractive from a societal perspective, given the favourable balance between costs and effects, especially considering the very low health care utilisation in the Netherlands compared to other European countries.